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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,940	08/23/2001	William J. Huff	P04978 (NAT115-04978)	1426

7590 11/10/2004
Docket Clerk
P.O. Drawer 800889
Dallas, TX 75380

EXAMINER

JOSEPH, JAISON

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 11/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/935,940

Applicant(s)

HUFF ET AL.

Examiner

Jaision Joseph

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 2 and 9 – 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Eriksson et al (US Patent 6,011,815).

Regarding Claims 1 and 9, Eriksson et al teaches that the output of the frequency modulator is connected to the delta sigma modulator. Eriksson teaches that on a FSK (frequency shift keyed) receiver (column 1 line 5-10) comprising a phase lock loop (PLL) having a phase detector and frequency divider circuit (column 5 line 17-19) , which can adjust the frequency dividing factor depends on the input signal, a frequency discriminator that receives the incoming signal and generate a correction signal, and a delta-sigma modulator, controlled by the signal from the frequency detector, that controls the frequency divider circuit (column 5 line 48-49).

Regarding claims 2 and 10, with the limitations of claim 1 and 9 respectively, Eriksson et al teaches that channel selection can be performed by adding an offset to the input of the delta sigma modulator (column 2 line 26-28). This is equivalent to the limitation of subtracting the correction signal from the normal carrier frequency as recited in claims 2 and 10.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2634

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 - 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eriksson et al (US Patent 6,011,815) as applied to claim 1 above, and in view of Takahiro et al (US Patent 5,170,131).

Regarding claim 3, which inherits the limitations of the claim 1, Eriksson et al cited as explained above paragraph. Eriksson failed to teach that a frequency discriminator mixes the incoming signal and a reference signal to generate an intermediate frequency signal, and split the intermediate signal into two signals. However, Takahiro et al teach that a frequency discriminator comprises a mixer (figure 2 element 11) that receives an incoming signal (figure 2 element 10) and mixes with signal from local oscillator (figure 2 element 15) to generate an intermediate frequency signal (figure 2 signal I). It would have been obvious to an ordinary skilled in the art at the time of the invention to use Takahiro's frequency discriminator in place of Eriksson's frequency discriminator to benefit simpler design.

Regarding claim 4, which inherits the limitations of the claim 3, Takahiro et al teach that split the incoming signal 10 (see figure 1) into two and mix the split signal with signal from the local oscillator 15 in mixers 11 and 12 to generate intermediate signals I and Q respectively. It is well known in the art that splitting a signal into two and mixing with another signal in two mixers is equivalent to mixing the signals together first and split the signal later

Regarding claim 5, which inherit the limitations of claim 4, Takahiro et al teach applying a phase delay 16 to the oscillator output 15 and mixing the output signal of component 16 with incoming signal to produce a intermediate frequency. This is equivalent to the limitation of mixing the incoming signal with reference signal then splitting the resultant signal into two and phase delaying one of the split signals. It is well known in the art that multiplying two signals together and phase shifting the resulting signal to a specific angle is equivalent to phase shifting one of the signal to a specific angle and multiplying those signals together. It would be obvious to an ordinary skilled in the art to use the Takahiro's frequency discriminator to enhance the efficiency of the discriminator.

Regarding claim 6, which inherits the limitations of claim 5, Takahiro et al teach that output signal I of the detector 11 and the output signal Q of the detector 12 have phase difference of 90 degrees from each other (see column 3 line 6 – 8).

Regarding claim 7, which inherits the limitations of claim 5, Takahiro et al further teach the output signal I of detector 11 and the output signal Q of detector 12 are multiplied together by the multiplier 13. The output signal of the multiplier 13 represented as a voltage, function of time and phase error θ (see column 3 line 8 – 12).

Regarding claim 8, the second mixer is outputting an analog signal and the delta sigma modulator's input need to be digital inputs. It would be obvious to an ordinary skilled in the art to connect these components via an analog-to-digital converter to achieve the system compatibility.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jaison Joseph whose telephone number is (571) 272-6041. The examiner can normally be reached on M-F 8:30 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571) 272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jaison Joseph
Patent Examiner



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SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800